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Investigating the Association Between Big Five Model of Personality and Hopelessness: A Cross-sectional Investigation on Varsity Male Football Athletes

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ABSTRACT

Similar to physical health, the psychological health of varsity student athletes is of utmost importance as it has the ability to directly impact their overall academic performance and physical well-being. Particularly, personality traits and the feelings of hopelessness might fall among the key psychological factors that may significantly influence their overall quality of life. However, as per our knowledge, to date no past study has been initiated or conducted to investigate the interplay between BFMP and hopelessness among varsity male football players. Therefore, to investigate the association between BFMP and hopelessness among varsity male football players was the main focus of this study. A quantitative, cross-sectional research design was employed to investigate the relationship between BFMP and hopelessness among varsity male football athletes. A demographics questionnaire, Hopelessness-Inventory-5 (HI-5) and Big Five Inventory (BFI-10) were employed for gathering data. The results attained from the hierarchical multiple regression analysis revealed novel findings. The ANOVA table indicated that the BFMP moderately predicted hopelessness among varsity male football athletes. Whereas, from the BFMP, only the trait agreeableness was substantially negatively associated with hopelessness among varsity male football athletes. This suggested that participants that scored high on agreeableness trait might possess lower hopelessness levels. Utilizing these findings, future researchers, relevant scholars, sports psychologists and coaches may be able to develop specified mental health interventions to counter psychological problems, particularly hopelessness among varsity male football athletes.

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1. Introduction

Similar to physical health, the psychological health of varsity student athletes is of utmost importance as it has the ability to directly impact their overall academic performance and physical well-being (Kaishian & Kaishian, 2021). Particularly, personality traits and the feelings of hopelessness might fall among the key psychological factors that may significantly influence their overall quality of life (Kemarat et al., 2022; Sarmiento, Miller, & Jones, 2022). Therefore, it is significantly crucial to understand the psychological challenges and their copying mechanisms to promote both athletic and academic success among varsity student athletes. Hopelessness can be perceived as a psychological state in which a person loses all hopes for a positive outcome (Sander et al., 2023). It can further be characterized by the lack of optimistic approach towards challenges and having a strong belief that they won't be able to overcome any potential

challenges in life (Nieto et al., 2023). This absence of hope might also disrupt the drive to achieve goals and ambitions resulting in a lack of progress in their personal and professional lives (Beach, Brown, & Cukrowicz, 2021).

In particular, student athletes might be the most influenced population in this regard as they have to deal with both academic and athletic pressures (Storey, Hewitt, & Ogrodniczuk, 2024). This extraordinary demand to excel in both areas might lead to the development of overwhelming stress and anxiety among them (Tingaz et al., 2023). They may also develop the feelings of self-doubt due to mental exhaustion and burnout caused by constant pressure to maintain balance between their academic and athletic ventures (Latessa, 2024). Additionally, a scoping review conducted on collegiate level student athletes seemed to suggest that hopelessness was amongst the primary risk factors for higher incidence of suicidal ideation (Orlins et al., 2024). However, the intensity or level of hopelessness might vary depending upon the type of personality an individual possesses as assessing or understanding the personality of an individual can be a complex phenomenon (Kocjan, Kavčič, & Avsec, 2021). Therefore, the relevant practitioners and sports psychologists specifically designed the Big Five Model of Personality (BFMP) (Mammadov, 2022). This model is recognized and widely accepted as one of the most efficient and reliable frameworks to evaluate and understand the human personality (Nikcevic et al., 2021).

The BFMP also known as the Five Factor Model comprises of five personality traits including extraversion, agreeableness, neuroticism, conscientiousness and openness (Modersitzki et al., 2021). Most psychologists have been suggested to utilize the BFMP to examine and assess the differences in behaviors and emotions of each individual. This may aid them to present a better picture of each individual's personality (Luo, Ge, & Qu, 2023). Additionally, when we thoroughly examined the literature, it became clear that personality traits might influence various aspects of an individual's life. These influences may include physical performance (Piepiora & Piepiora, 2021), academic achievements (Mammadov, 2022) and interpersonal relationships (Abdelrahman, 2022). For instance, individuals reporting high levels of conscientiousness trait have been suggested to be highly organized while accompanying a goal-oriented approach towards every task (Gao et al., 2021). In a similar realm, those individuals who had high extraversion levels were also observed to possess sense of strong leadership skills. They were also reported to accompany active participation in social gathering and activities (Vaughan-Johnston et al., 2021).Past studies have also reported that creativity levels were incredibly higher among individuals who also reported high openness levels (Barańczuk, 2021). The agreeableness trait, however, has been associated with the tendency of an individual to exhibit positive social relationship and teamwork (Latipah, Kistoro, & Putranta, 2021). Individuals with high levels of this agreeableness trait have been suggested to possess team work abilities which fall among the most prominent attributes of a successful team sports players (Yang et al., 2024). However, neuroticism is one such trait that has been found to influence negatively on various physical and psychological life domains of an individual (Contreras, Granquist, & Martin, 2023). It has been suggested that as a result of high neuroticism levels, individuals might experience instable emotional regulation which may further lead them to increased levels of mood swings and depression (Zhang et al., 2021). However, these personality traits may also exhibit variations depending upon the type of sports, particularly during high stress sports such as football (Iverson & Terry, 2021).

Football is a type of team sport that demands high levels of attention, coordination and cooperation among players (Franceschi et al., 2024). Due to its intense physical and mental demands along with the stress of performing in a football competition, most football players might suffer significant amount of psychological pressure (Woods, McCabe, & Mistry, 2022). Notably, varsity male football athletes are often exposed to these highly stressful academic and athletic conditions (Ahmad et al., 2024). Furthermore, to balance the rigorous training schedules along with academic responsibilities might place additional pressure on them (Ahsan & Ali, 2023). Given these challenges, male varsity football athletes might be the ideal population for this study. Additionally, no past study has previously investigated the relationship between BFMP and hopelessness among varsity male football athletes further strengthening the need for this research. Therefore, to investigate the association between BFMP and hopelessness among varsity male football athletes was the core objective of this study. We assumed that the BFMP might significantly predict hopelessness among varsity male football athletes. This prediction was

based on studies conducted in the past on college and university students in a similar context (Bayrami et al., 2012; Göktan & Akbağ, 2010; Mutlu, Balbag, & Cemrek, 2010). Additionally, the results attained from this study might aid in understanding the psychological changes that occur during highly competitive and pressurized environments among varsity athletes. Furthermore, by pinpointing the specific personality traits that may escalate the feelings of hopelessness, the study might further assist in designing targeted interventions to counter hopelessness among varsity male football athletes. On the other hand, the relevant coaches, practitioners and sports psychologists might use the findings of this study to design support systems for varsity athletes. These support systems may further promote a positive and supportive team culture while fostering resilience and mental well-being among varsity male football athletes.

2. Methodology

2.1. Design of the study

A quantitative, cross-sectional research design was employed to investigate the relationship between BFMP and hopelessness among varsity male football athletes.

2.2. Inclusion Criteria

To clearly define and outline the target population for our study, we established the following inclusion criteria:

1. The participant must be male in gender.
2. He must be a football player of any playing level and must have a playing experience of at least 3 years.
3. His age must be ranging between 18 years and 25 years.
4. He must be enrolled in a Bachelors or Masters level academic program at any public or private sector higher educational institute.
5. He must have represented his university team at intervarsity level.

2.3. Population

While strictly following the above-mentioned inclusion criteria, we were able to specify only 90 varsity male football athletes. Due to limited varsity male football athlete population, we selected the total population as the sample size of the study. As all the included participants belonged to distinct universities, therefore, they were approached physically during their university hours. Furthermore, all of them willingly and carefully completed their questionnaires, resulting in a response rate of 100%. The participants were having a mean age of 21.47 with SD = 2.265 which indicated homogeneity in the final sample population. Furthermore, they were also highly experienced in Football sport as the mean experience was reported to be M = 7.69 with SD = 2.651. An elaborative demonstration of the demographics is presented in Table 1.

Table 1: Characteristics

Variables	**Frequency(f)**	**Percentage (% age)**	**Age**	
Sports Participation Level			**M**	**SD**
Inter-university	56	62.2	21.47	2.265
National Level	33	36.7		
International Level	1	1.11		
Playing Experience (Football)	**Minimum**	**Maximum**	**M**	**SD**
	3 years	15 years	7.69	2.651

Note: N = 90

2.4. Sample Size

Given the relatively small sample size (N = 90) for this study, it was mandatory to determine whether this small sample size possesses adequate level of statistical power for detecting meaningful results or not. Therefore, to determine adequate sample size, we conducted the G power analysis. The analysis was performed for multiple linear regression (fixed model) with effect size being medium ($f^2 = 0.15$) and significance level being 0.05. Additionally, the power ($1 - \beta$) was set at 0.80 and the number of predictors added in the analysis were two. In line with the above-mentioned guidelines, the g power analysis suggested a required sample size of 68 participants. Whereas, our study exceeded this threshold (N = 90) and indicated sufficient power to detect moderate to strong associations.

2.5. Instruments

The instrument portion was comprised of three sections which were as follows:

2.5.1. Demographics

The first section involved personal information of the participants including their age, highest playing level, playing experience, highest academic degree and intervarsity team representation.

2.5.2. Hopelessness-Inventory-5 (HI-5)

The second section of the instrument was comprised of Hopelessness-Inventory-5 scale (HI-5) that was designed by Wang et al. (2023). It was particularly developed to measure the hopelessness symptoms among individuals. It has previously been reported to possess a Cronbach's alpha score of 0.92 that indicated excellent internal consistency (Wang et al., 2023). In addition, we also utilized split-half method to calculate the reliability of this tool. The correlation value of .536 between two halves and a Spearman-Brown coefficient value of 0.711 also indicated an acceptable level of reliability for this tool.

2.5.3. Big Five Inventory (BFI-10)

Lastly, the final section included a brief version of personality assessment questionnaire. This tool, also known as the Big Five Inventory (BFI-10) consisted of 10 items that was developed by Rammstedt et al. (2013). It falls among the category of most reliable tools within the context of student athlete population as several past studies have particularly utilized this tool to measure personality traits of student athletes (Ali, Ali, & Ahmed, 2024; Beidler et al., 2017; Elumaro, 2016). Additionally, it has also been suggested to demonstrate relatively good reliability scores across distinct samples of population (Chen et al., 2024; Fernandez et al., 2023). However, due to relatively shorter length and highly concise nature of the tool, we did not calculate the Cronbach alpha for BFI-10 (Airaksinen et al., 2021).

2.6. Data Collection

Before initiating the process of gathering data, we obtained the ethical approval from the relevant department of our institution. Varsity male football athletes from distinct private and public sector universities were targeted for the collection of data. We also obtained a duly signed informed consent form from each participant prior to starting the process of data gathering. Each participant was then briefed in detail about the objective and aim of the study. They were also encouraged to consult the researcher in case of any difficulty before completing the form to avoid any errors in data. The entire process was in accordance with the ethical guidelines and the anonymity and confidentiality of data was also ensured. Each participant spent around 15 to 20 minutes to complete the questionnaire.

2.7. Data Analysis

To analyze the gathered data, IBM SPSS V 22.0 was utilized. Descriptive statistics for demographics and hierarchical multiple regression analysis to investigate the relationship between BFMP and hopelessness were applied.

3. Results

3.1. Testing the Assumptions

Before proceeding with the primary analysis, we conducted a preliminary analysis to account for and test the assumptions of linearity, homoscedasticity and multicollinearity. The outcomes of the preliminary analysis yielded that our data met all the assumptions of linearity and homoscedasticity. In addition, the VIF and tolerance values were also within the normal range indicating that no severe multicollinearity existed among the predictors.

3.2. Primary Analysis

3.2.1. Descriptive Analysis

We applied the descriptive statistics to determine the prominence of each component of BFMP among varsity male football athletes.

Table 2: Descriptive statistics of BFMP and Hopelessness in Varsity Male Football Athletes

	Variables	M	SD
1	Openness	3.48	0.849
2	Agreeableness	3.43	0.779
3	Extraversion	3.42	0.789
4	Conscientiousness	3.31	0.913
5	Neuroticism	2.50	0.861
6	Hopelessness	8.60	2.788

The results revealed that varsity male football athletes reported extremely high level of Openness trait (M = 3.48, SD = 0.849) followed by Agreeableness trait (M = 3.43, SD = 0.779) that was also suggested to be high among them. In addition, varsity male football athletes also demonstrated moderate level of Extraversion trait (M = 3.42, SD = 0.789), low level of Conscientiousness trait (M = 3.31, SD = 0.913) and extremely low level of Neuroticism trait (M = 2.50, SD = 0.861). Lastly, the results also suggested that varsity male football athletes possessed relatively low level of hopelessness with M = 8.60, SD = 2.788. A detailed presentation of the results of descriptive statistics is presented in Table 2.

3.2.2. Hierarchical Regression Analysis

We carried out a two-step hierarchical multiple regression analysis with hopelessness being the dependent variable. This was because during the preliminary analysis, the Pearson correlation table revealed that two confounding variables (Sports participation level and playing experience) were significantly correlated with dependent variable hopelessness. Hence, in the first step of regression, we entered both confounding variables. Whereas, the second step involved all the independent variables i.e. BFMP.

Table 3: Results of Hierarchical Multiple Regression Analysis

Dependent variable	Predictors	B	β	t	*p*	95% CI		R^2	ΔR^2	p
						Low	Up			
	Step 1							0.067	0.067	0.048
	Sports participation level	-0.287	-0.272	-2.235	0.028	-0.541	-0.032			
	Playing Experience	1.424	0.262	2.148	0.035	0.106	2.742			
	Step 2							0.169	0.101	0.029
Hopelessness	Sports participation level	-0.145	-0.138	-1.049	0.297	-0.420	0.130			
	Playing Experience	1.217	0.224	1.795	0.076	-0.132	2.565			
	Extraversion	0.265	0.075	0.700	0.486	-0.488	1.017			
	Agreeableness	-0.869	-0.243	-2.093	0.039	-1.694	-0.043			
	Conscientiousness	-0.003	-0.001	-0.009	0.993	-0.675	0.669			
	Neuroticism	0.616	0.190	1.752	0.084	-0.083	1.316			
	Openness	-0.157	-0.048	-0.400	0.690	-0.939	0.625			

The results in Table 3 demonstrated that both the confounding variables (sports participation level and playing experience) contributed substantially to the regression model with $F(2, 87) = 3.145$, $p < 0.05$ in the first step. Additionally, both these variables accounted for 6 % variance in predictor variable hopelessness. However, after adding five additional independent variables of BFMP in the second step of regression, the variance in hopelessness was increased to 16.9 % with $F(7, 82) = 2.376$, $p < 0.05$. Conversely, both confounding variables lost their significance in the second step indicating that the BFMP might have absorbed their predictive powers. Lastly, from the BFMP only the trait agreeableness revealed notable negative association with hopelessness ($\beta = -0.243$, $p = .039$). This suggested that participants that scored high on agreeableness trait might possess lower hopelessness levels. Whereas, the traits Extraversion ($p = 0.486$), Conscientiousness ($p = 0.993$), Neuroticism ($p = 0.084$) and Openness ($p = 0.690$) did not demonstrate any considerable link with hopelessness among varsity male football athletes.

4. Discussions

After an extensive and detailed examination of the literature, it was apparent that to date no past study has been initiated or conducted to investigate the interplay between BFMP and hopelessness among varsity male football players. Therefore, to investigate the association between BFMP and hopelessness among varsity male football players was the main focus of this study. The results revealed from the hierarchical multiple regression analysis revealed novel findings. The ANOVA table indicated that the BFMP moderately predicted hopelessness among varsity male football athletes. Whereas, from the BFMP, only the trait agreeableness was

substantially negatively associated with hopelessness among varsity male football athletes. This suggested that participants that scored high on agreeableness trait might possess lower hopelessness levels. Whereas, the traits extraversion, conscientiousness, neuroticism and openness failed to exhibit any notable link with hopelessness among varsity male football athletes.

The findings from the study suggested that the overall BFMP significantly predicted hopelessness among varsity male football athletes. Based on our review of the literature, no known research has been conducted in the past on student athletes to assess the association between BFMP and hopelessness. However, several studies involving other population types also revealed similar findings (Bayrami et al., 2012; Göktan & Akbağ, 2010; Mutlu, Balbag, & Cemrek, 2010). Notably, a study was conducted on college students of Iranian university to examine the association between dimensions of personality and hopelessness. The findings emerged from the study indicated a significant relationship between personality dimensions and hopelessness among college students (Bayrami et al., 2012). Correspondingly, Mutlu, Balbag and Cemrek (2010) also conducted a study with the similar objective of examining whether BFMP predict hopelessness among university students or not. The results suggested that the BFMP significantly predicted hopelessness among university students. Even though the study was designed to only examine the association between BFMP and hopelessness and not their contributing factors. However, it can be proposed that due to participation in highly competitive sports and excess academic pressures, varsity male football athletes might experience heightened levels of emotional exhaustion leading to hopelessness.

Additionally, among the BFMP, the trait agreeableness was significantly negatively linked with hopelessness among varsity male football athletes. These results are partially in line with previous studies conducted on varsity and collegiate students as agreeableness trait has been suggested to significantly negatively associate with hopelessness in these studies (Bayrami et al., 2012; Göktan & Akbağ, 2010). On the other hand, a study conducted by Mutlu, Balbag and Cemrek (2010) demonstrated conflicting findings. The study was conducted on varsity students from Education department to assess the association among BFMP and hopelessness. The findings of the study suggested that only the trait extraversion was significantly negatively linked with hopelessness among varsity students (Mutlu, Balbag, & Cemrek, 2010). As mentioned above, this study was solely focused on investigating the association between BFMP and hopelessness and not their fundamental dynamics. However, it can be proposed that those varsity athletes who mostly compete in a team sport may possess higher levels of agreeableness trait. Given that those reporting higher on agreeableness trait have been suggested to possess increased sensitivity levels and are mostly conflict avoiding beings. This conflict-avoidant nature of theirs might have contributed in the reduction of negative emotional states therefore lowering the feelings of hopelessness.

Whereas, the traits extraversion, conscientiousness, neuroticism and openness did not demonstrate any considerable link with hopelessness among varsity male football athletes. These findings present a contradiction as past studies have reported a considerable connection among these traits and hopelessness (Bairami, Eghbali, & Gholizadeh, 2012; Bayrami et al., 2012; Göktan & Akbağ, 2010). For instance, extraversion and conscientiousness being positive traits have been suggested to influence negatively on hopelessness among varsity students (Bayrami et al., 2012). On the other hand, neuroticism trait has been observed to associate positively with hopelessness in students belonging to higher education institutions (Mutlu, Balbag, & Cemrek, 2010). This lack of association between the traits extraversion, conscientiousness, neuroticism, openness and hopelessness obtained from our study might be explained through distinct empirical approaches. While these traits have been suggested to exhibit a significant link with mental health outcomes however, our findings suggest that several external factors might act as moderators for the relationship between personality traits and hopelessness. Studies conducted in the past have also recommended that personality traits (Schutter et al., 2020). Rather they mostly interact with several environmental and psychological factors of an individual to shape their responses.

4.1. Practical Implications

The results obtained from this research might offer several probable practical implications for future researchers, relevant scholars, sports psychologists and coaches. With the help of

these findings, they may be able to develop specified mental health interventions to counter psychological problems, particularly hopelessness among varsity male football athletes. Furthermore, coaches might also introduce resilience training and stress management programs to improve both sports and academic performance among varsity male football athletes.

4.2. Limitations and Directions for Future Research

The current study utilized cross-sectional methodological approach to answer the research question. This approach, however is considered relatively sub-optimal as compared to experimental or randomized control trial. Therefore, future research must be conducted while utilizing stronger study designs such as longitudinal and experimental to further strengthen the current evidence. Secondly, due to the study being cross-sectional, self-reported measures were utilized to gather data. It has previously been observed that studies utilizing self-reported measures have heightened risk of potential biasness in responses. In particular, studies being conducted on personality traits and mental health have been observed to be more susceptible to social desirability bias. Thirdly, the study utilizes only male varsity athlete population to conduct this study which limits the generalizability of the results to female varsity athletes. Therefore, we recommend the incorporation of female varsity athletes in future studies to gain a more comprehensive and gender-based understanding of this association between BFMP and hopelessness. Lasty, the study used shorter or brief versions of the tools to measure BFMP and hopelessness among varsity male football athletes. Although these brief versions are efficient and time-saving approaches however, their limited scope might reduce the depth of assessment. Hence, future studies should consider utilizing the large versions of these tools to increase the strength of the study's results.

5. Conclusion

To investigate and explore the relationship between BFMP and hopelessness among varsity male football athletes was core objective of this study. The results obtained as a result of this cross-sectional investigation revealed novel findings. The findings suggested that only the trait agreeableness was significantly negatively associated with hopelessness among varsity male football athletes. These findings highlight the need to develop specified mental health interventions to counter psychological problems, particularly hopelessness among varsity male football athletes. Future studies should incorporate diverse methodological approaches such as longitudinal, experimental or qualitative to have a more nuanced understanding of this association among distinct varsity athlete populations.

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